a fourth semiconductor region of the second conductivity type that is provided in a surface layer of a second main surface of the semiconductor substrate;

a third electrode that comes into contact with the fourth semiconductor region;

a fifth semiconductor region of the first conductivity type that is provided in the first semiconductor region which is close to the fourth semiconductor region, faces at least a portion of a first-semiconductor-region-side surface of the fourth semiconductor region, and has a higher impurity concentration than the first semiconductor region; and

a sixth semiconductor region of the second conductivity type that is provided in an outer circumferential portion of the semiconductor substrate and extends from the first main surface of the semiconductor substrate to the fourth semiconductor region through the first semiconductor region,

wherein a total dose of a first-conductivity-type impurity in the fifth semiconductor region is equal to or less than 2.0×10^{12} cm^{-2}.

10. A semiconductor device comprising:

a first semiconductor region that is a semiconductor substrate of a first conductivity type;

a second semiconductor region of a second conductivity type that is selectively provided in a surface layer of a first main surface of the semiconductor substrate;

a third semiconductor region of the first conductivity type that is selectively provided in the second semiconductor region and has a higher impurity concentration than the first semiconductor region;

a trench that extends from the first main surface of the semiconductor substrate to the first semiconductor region through the third semiconductor region and the second semiconductor region;

an insulating film that is provided along an inner wall of the trench;

a first electrode that is embedded in the trench through the insulating film;

a second electrode that comes into contact with the third semiconductor region and the second semiconductor region;

a fourth semiconductor region of the second conductivity type that is provided in a surface layer of a second main surface of the semiconductor substrate;

a third electrode that comes into contact with the fourth semiconductor region;

a fifth semiconductor region of the first conductivity type that is provided in the first semiconductor region which is close to the fourth semiconductor region, faces at least a portion of a first-semiconductor-region-side surface of the fourth semiconductor region, and has a higher impurity concentration than the first semiconductor region; and

a sixth semiconductor region of the second conductivity type that is provided in an outer circumferential portion of the semiconductor substrate and extends from the first main surface of the semiconductor substrate to the fourth semiconductor region through the first semiconductor region,

wherein a total dose of a first-conductivity-type impurity in the fifth semiconductor region is equal to or less than 2.0×10^{12} cm^{-2}.

11. The semiconductor device according to claim **9**, wherein the fifth semiconductor region faces the entire first-semiconductor-region-side surface of the fourth semiconductor region.

12. The semiconductor device according to claim **9**, further comprising:

an active region including the second semiconductor region, the third semiconductor region, the fourth semiconductor region, the first electrode, the second electrode, and the third electrode; and

an edge termination structure region including a plurality of seventh semiconductor regions of the second conductivity type that are provided in the surface layer of the first main surface of the semiconductor substrate so as to surround the active region.

13. The semiconductor device according to claim **9**, wherein the first semiconductor region has sufficient resistivity to prevent a depletion layer, which is spread from the second semiconductor region to the fifth semiconductor region when a reverse rated voltage is applied using the second electrode as a positive electrode, from reaching the fifth semiconductor region.

14. The semiconductor device according to claim **10**, wherein the fifth semiconductor region faces the entire first-semiconductor-region-side surface of the fourth semiconductor region.

15. The semiconductor device according to claim **10**, further comprising:

an active region including the second semiconductor region, the third semiconductor region, the fourth semiconductor region, the first electrode, the second electrode, and the third electrode; and

an edge termination structure region including a plurality of seventh semiconductor regions of the second conductivity type that are provided in the surface layer of the first main surface of the semiconductor substrate so as to surround the active region.

16. The semiconductor device according to claim **10**, wherein the first semiconductor region has sufficient resistivity to prevent a depletion layer, which is spread from the second semiconductor region to the fifth semiconductor region when a reverse rated voltage is applied using the second electrode as a positive electrode, from reaching the fifth semiconductor region.

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